

Appendix D. Proposed Guiding Principles and Associated Issues with the Pre-CERP Baseline

In order to identify appropriate assumptions for the Pre-CERP Baseline condition, the following guiding principles are proposed along with issues that may surround these principles. The public process for resolving these Pre-CERP Baseline issues has included workshops and close interaction with Water Resources Advisory Commission (WRAC), the South Florida Ecosystem Restoration Task Force and the South Florida Ecosystem Restoration Working Group. Presentations of regional modeling scenarios have framed the ramifications of outstanding issues. A matrix of the proposed Pre-CERP Baseline assumptions is included at the end of this appendix.

Guiding Principles Regarding the Pre-CERP Condition

1. General System-Wide/Regional Conditions:

- As a general principle, conditions will be based on the assumptions in the 1999 C&SF Project Comprehensive Review Study (Yellow Book) and the 1995 base case of the *Lower East Coast Regional Water Supply Plan* updated to December 2000 conditions. Deviations or exceptions to this general principle must be explicitly defined.

2. Hydrologic Conditions:

- As a general principle, rainfall and evapotranspiration will be determined based on a period of record for the regional hydrologic conditions from 1965 through 2000.

3. Physical Conditions/Structures:

- As a general principle, the structures, operations, and projects that were in existence as of December 2000 will be accounted for.

Issue: There were certain non-CERP projects that were not constructed and operational in December 2000 but were Federally authorized as of that date (e.g., C-111 and Modified Water Deliveries). In addition, certain State mandated projects were under construction but not completed and others will be constructed in the near future (e.g., STA 1 East and STA 3/4). Should these projects be included in the Pre-CERP Baseline? If so, they will influence operations, demands, and possibly existing legal sources.

Response: It would be inaccurate to attempt to effectively model Federal and State projects which have not yet been designed and which do not have final operational plans. Including these projects in the Pre-CERP Baseline would result in an inaccurate picture of actual system performance as of December 2000, thereby potentially changing the existing legal source quantification to a minor or moderate degree. Furthermore, it is proposed to include these non-CERP Federal and State authorized, once constructed, projects in the Existing

Condition PIR Baseline through time. Additionally, those CERP and non-CERP projects, which have been completed, will be included in the PIR tentatively selected plan.

4. Operational Conditions:

- As a general principle, operations in place as of December 2000 will be assumed.

Issue – Certain operations were considered to be “experimental”, or were under legal review or development as of December 2000. Examples are the Everglades National Park (ENP) sparrow issues vs. Interim Structure and Operation Plan (ISOP) vs. Interim Operation Plan (IOP) vs. Combined Structure and Operation Plan (CSOP), S-9 litigation, ENP experimental water deliveries vs. 1983 delivery authorizations and South Miami-Dade flood protection issues. How should these conflicting legal and operational authorities be handled in the Pre-CERP Baseline?

Response: Including operational plans in the Pre-CERP Baseline which were not actually in effect in December 2000 would result in an inaccurate picture of actual system response as of that date thereby potentially changing the existing legal source quantification to a minor or moderate degree. It is proposed to include CSOP or other Federally required operational plans in the Existing Condition PIR once these projects are constructed through time. Additionally, those CERP and non-CERP projects, which have been completed, will be included in the PIR tentatively selected plan.

5. Demand Conditions:

- As a general principle, urban demands will be based on the actual amount pumped in 2000 and agricultural demands will be based on the irrigation requirements needed to satisfy the supplemental evapotranspiration based on the actual crop acreage that existed in 2000.

Issue 1: Demands for urban consumptive uses could be assumed to be that amount which was permitted as of December 2000. Demands associated with agricultural consumptive use could be assumed to be that amount that was permitted to be irrigated as of 2000.

Response: The CERP and the LEC plan assumed pumpage for urban demands and actual crop acreage for the 1995 conditions that was used as the base at that time. Including permitted demands for urban and agriculture in the Pre-CERP Baseline as of 2000 would result in an inaccurate picture of actual system response as of that date thereby potentially changing the existing legal source quantification to a minor or moderate degree. Additionally, permitted demands will be included as part of the Existing Condition PIR baseline, and actual demands will be included in the PIR tentatively selected plan.

Issue 2. The method of calculating evapotranspiration is important for estimating supplemental irrigation demand requirements for agricultural crops. Historically, this was done through the consumptive use permitting process by using a method known as

1 Blaney-Criddle. Recent data indicates that this method over-allocates water necessary for
2 the crop type. A newer method known as Agricultural Field Scale Irrigation
3 Requirements Simulation Model (AFSIRS) was used in the modeling for the LECRWSP
4 and CERP, and is judged to be a more accurate demand estimate method.
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6 **Response:** No sensitivity analysis was performed for this issue, however adequate data
7 exists to support the enhanced accuracy of the AFSIRS method for determining
8 supplemental irrigation estimates In South Florida.
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- 10 • As a general principle, non-consumptive uses in urban and agricultural service areas will
11 be accounted for as demands and will include deliveries for prevention of saltwater
12 intrusion, wetland protection, aquifer recharge and other resource protection purposes.
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- 14 • As a general principle, fish and wildlife demands will be based on historic operational
15 deliveries under Federal regulation schedules and other historic deliveries for beneficial
16 uses by fish and wildlife within regional environmental areas, including the water
17 conservation areas, Everglades National Park and the estuaries.
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Proposed Pre-CERP Baseline Assumptions

Feature	Assumptions
<i>Regional Input Data</i>	
Climate	<ul style="list-style-type: none"> The climatic period of record is from 1965 to 2000.
Topography	<p>Updated November 2001 using latest available information (in NGVD 29 datum). This update includes:</p> <ul style="list-style-type: none"> USGS High Accuracy Elevation data from helicopter surveys collected 1999-2000 for Everglades National Park and Water Conservation Area (WCA) 3 south of Alligator Alley USGS Lidar data (May 1999) for WCA-3A north of Alligator Alley Lindahl, Browning, Ferrari & Helstrom 1999 survey for Rotenberger Wildlife Management Area Stormwater Treatment Area surveys from 1990s Aerometric Corp. 1986 survey of the 8-1/2 square mile area Includes estimate of Everglades Agricultural Area subsidence Other data as in SFWMM v3.7 FWCC survey 1992 for the Holey Land Wildlife Management Area. (Documented in November 2001 SFWMD memorandum from M. Hinton to K. Tarboton).
Sea Level	<ul style="list-style-type: none"> Sea level data from six long-term USGS stations were used to generate a historic record to use as sea level boundary conditions for the 1965 to 2000 evaluation period.
Land Use	<ul style="list-style-type: none"> All land use has been updated using most recent FLUCCS data (1995), modified in the Lower East Coast urban areas using 2000 aerial photography (2x2 scale). (Documented in June 2002 SFWMD memorandum from J. Barnes to K. Tarboton).
Natural Area Land Cover (Vegetation)	<p>Vegetation classes and their spatial distribution in the natural areas comes from the following data:</p> <ul style="list-style-type: none"> Walsh 1995 aerial photography in Everglades National Park Rutchev 1995 classification in WCA-3B, WCA-3A north of Alligator Alley and the Miami Canal, WCA-2A & 2B Richardson 1990 data for Loxahatchee National Wildlife Refuge FLUCCS 1995 for Big Cypress National Preserve, Holey Land & Rotenberger Wildlife Management Areas & WCA-3A south of Alligator Alley and the Miami Canal. <p>(Documented in June 2002 SFWMD memorandum from J. Barnes to K. Tarboton).</p>
<i>Lake Okeechobee Service Area</i>	
LOSA Basins	<ul style="list-style-type: none"> Lower Istokpoga, S-4, North Lake Shore and Northeast Lake Shore demands and runoff based on AFSIRS modeling.
Lake Okeechobee	<ul style="list-style-type: none"> Lake Okeechobee Regulation Schedule WSE according to WSE decision trees. Lake Okeechobee Supply Side management policy for Lake Okeechobee Service Area water restriction cutbacks as per rule 40E-21. Emergency flood control backpumping to Lake Okeechobee from the Everglades

Feature	Assumptions
	Agricultural Area. <ul style="list-style-type: none"> • Kissimmee River inflows based on interim schedule for Kissimmee Chain of Lakes using the UKISS model. • Best Management Practices makeup water assumed to be 0% per year.
Caloosahatchee River Basin	<ul style="list-style-type: none"> • Caloosahatchee River Basin irrigation demands and runoff were estimated using the AFSIRS method based on existing planted acreage. • Public water supply daily intake from the river is included in the analysis.
St. Lucie Canal Basin	<ul style="list-style-type: none"> • St. Lucie Canal Basin demands estimated using the AFSIRS method based on existing planted acreage. • Basin demands include the Florida Power & Light reservoir at Indiantown.
Seminole Brighton Reservation	<ul style="list-style-type: none"> • Brighton Reservation demands are the entitlement quantities as per Table 7, Agreement 41-21 (Nov 92). • Supply-side management applies to this agreement.
Seminole Big Cypress Reservation	<ul style="list-style-type: none"> • Big Cypress Reservation irrigation demands reflect the Seminole Compact (3,917 ac-ft/month; Oct 98). • Supply-side management applies to the Compact.
Everglades Agricultural Area	<ul style="list-style-type: none"> • Everglades Agricultural Area irrigation demands are simulated using climatic data for the 36 year period of record and a soil moisture accounting algorithm, with parameters calibrated to match historical regional supplemental deliveries from Lake Okeechobee. • Best Management Practices assumed to reduce runoff by 0% annually.
Stormwater Treatment Areas	<ul style="list-style-type: none"> • Stormwater Treatment Areas 1W, 2, 5 & 6 operational. • Operation of Stormwater Treatment Areas assumes 6" minimum depth.
Holey Land Wildlife Management Area	<ul style="list-style-type: none"> • As per Memorandum of Agreement between the FWC and the District.
Rotenberger Wildlife Management Area	<ul style="list-style-type: none"> • Interim Operational Schedule (0.0 ft. dry season to 1.25 ft. wet season).
<i>Water Conservation Areas</i>	
Water Conservation Area 1 (Loxahatchee National Wildlife Preserve)	<ul style="list-style-type: none"> • Current C&SF Regulation Schedule. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if canal levels are less than minimum operating criteria of 14 ft. The bottom floor of the schedule (Zone C) is the area below 14 ft. and reads: "No net releases from WCA-1. Any water supply releases must be preceded by an equivalent volume of inflow."
Water Conservation Area 2 A&B	<ul style="list-style-type: none"> • Current C&SF regulation schedule. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if canal levels are less than minimum operating criteria of 10.5 ft.

Feature	Assumptions	
Water Conservation Area 3 A&B	<ul style="list-style-type: none"> • Current C&SF regulation schedule. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if canal levels are less than minimum operating criteria of 7.5 ft 	
<i>Lower East Coast Service Areas</i>		
Public Water Supply and Irrigation	<ul style="list-style-type: none"> • Public water supply wellfield pumpages and locations are based on actual pumpage data. • Irrigation demands are based upon existing land use and calculated using AFSIRS. • Miami-Dade County Water and Sewer Department West Wellfield Aquifer Storage and Recovery system (75 mgd). 	
Seminole Hollywood Reservation	<ul style="list-style-type: none"> • Hollywood Reservation demands are set forth under V.I.C of the Water Rights Compact. 	
Natural Areas	<ul style="list-style-type: none"> • For the Northwest Fork of the Loxahatchee River, the District operates the G-92 structure and associated structures to provide approximately 50 cfs over Lainhart Dam to the Northwest Fork, when the District determines that water supplies are available. • Flows to Pond Apple Slough through S-13A are adjusted in the model to approximate measured flows at the structure. • Flows to Biscayne Bay are simulated through Snake Creek, North Bay, the Miami River, Central Bay and South Bay. 	
Canal Operations	<ul style="list-style-type: none"> • C&SF system and operating rules in effect in 2000 including operations to meet control elevations in the primary coastal canals for the prevention of saltwater intrusion. • Existing secondary drainage/water supply system. • Selected portions of the Broward secondary canal recharge network based on the Lower East Coast Regional Water Supply Plan. 	
<i>Western Basins and Big Cypress National Preserve</i>		
Western Basins	<ul style="list-style-type: none"> • Estimated and updated historical inflows from western basins at two locations: G-136 and G-406. The G-406 location represents potential inflow from the C-139 Basin into STA 5. Data for the period 1978 - 2000 is the same as the data used for the C-139 Basin Rule development. 	
Big Cypress	<ul style="list-style-type: none"> • The northern end of Big Cypress receives flows from S-190. • Tamiami Trail culverts are not modeled specifically but resistance to flow to represent the culverts is simulated. 	
<i>Everglades National Park and Florida Bay</i>		
	<ul style="list-style-type: none"> • Water deliveries to Everglades National Park are based upon the Interim Structural and Operational Plan (ISOP-9dbR). 	

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<i>Region-wide Water Management and Related Operations</i>	
	<ul style="list-style-type: none"> • The existing condition reflects the existing water shortage policies as reflected in South Florida Water Management District rule 40E-21. • The impacts of declarations of water shortages on utility water use reflect assumptions contained in the Lower East Coast Regional Water Supply Plan for the 2010 base case.